

Chapter 14

Evaluation of Alternatives to the Proposed Project

14.1 Introduction

The purpose of this chapter is to discuss and analyze the impacts and mitigation measures proposed for Alternative B, In-Kind Replacement, and Alternative C, No Project. A detailed description of these alternatives can be found in chapter 2, “Description of Project Alternatives.” An analysis of Alternatives B and C follows. In many instances, the impacts and mitigation measures for Alternative B are the same as those for Alternative A, Proposed Project. This chapter provides a comparison of the alternatives and highlights areas where Alternative B or C would cause 1 or more significant effects in addition to those that would be created by the proposed project. A comparative matrix of the alternatives and impacts of the alternatives is provided in table S-1 in the Summary.

14.2 Impacts and Mitigation Measures of Alternative B: In-Kind Replacement

14.2.1 Hydrology

Implementation of Alternative B would result in the same impacts and require the same mitigation measures related to hydrology as those described for the proposed project. Additionally, it would result in the following impact, which would substantially differ from the proposed project.

Impact 14-1: Erosion and Siltation from Project Operation

Construction of an in-kind replacement structure would result in the accumulation of up to 16,000 cubic yards of sediment and cobble behind the

low-head diversion dam because it is not designed to pass sediment (Williams pers. comm.). Sediment was historically backed up behind the former diversion dam and removed periodically through instream work and operation of the intake gate. The installation of a new diversion dam in this location would result in substantial siltation in an area that does not currently have siltation. However, this additional sedimentation would be removed through periodic sediment removal. Off-site erosion and sedimentation is not anticipated because the river is well armored by the substrate. The implications and environmental effects of sediment removal are described under “Water Quality.”

14.2.2 Water Quality

Impact 14-2. Violation of Water Quality Standards during Project Operation

As described in chapter 4, “Hydrology,” Alternative B would not be designed to pass sediment and would therefore accumulate sediment that would need to be removed periodically to ensure that material does not block the fish ladder or enter the flume. This ongoing maintenance activity would likely cause a temporary increase in turbidity and suspended sediment. This impact is considered *significant*. Implementation of Mitigation Measure 14-1 would reduce this impact to a less-than-significant level.

Mitigation Measure 14-1: Monitor sediment accumulation and design removal activities to minimize water quality degradation

The applicant shall annually monitor the accumulation of sediment and characterize its particle size distribution or other parameters necessary to effectively develop a maintenance program to minimize water quality degradation. The plan shall set seasonal limits and frequency of in-channel activities as well as BMPs to control increases in turbidity and suspended sediments to the maximum extent practicable.

14.2.3 Geology, Seismicity, and Soils

Implementation of Alternative B would result in similar impacts on geology, seismicity, and soils as those described for the proposed project, and all are considered *less than significant*. Under Alternative B, soil-nail walls or MSEs would not be constructed, and there would be no need for the rock netting at the upstream end of the construction area. However, improvements would be made along Old Highway 40. No additional impacts are anticipated under this alternative.

14.2.4 Aquatic Resources

Implementation of Alternative B would result in similar impacts on aquatic resources as those described for the proposed project, except that a fish screen is not provided in the sediment detention channel. This would result in the following additional fishery impact described below. Upstream fish passage would be provided in the form of a fish ladder on river right.

Impact 14-3: Entrapment of Fish in the Flume

Construction of an in-kind replacement structure would result in the intake of unscreened river water and fish could become entrapped in the flume. Because no screen is proposed for the sediment detention channel, any diverted fish would likely die in the flume. However, the entrapment of rainbow and brown trout in the flume would not happen in large enough numbers to eliminate an animal community or adversely affect the Basin Plan's beneficial use of sportfishing. Although the Lahontan cutthroat trout does not currently inhabit the project reach and an immediate adverse effect on this species is not anticipated, a long-term restoration objective for the Lahontan cutthroat trout is to reintroduce this species to the project area. This unscreened diversion could adversely affect this endangered species once it is reintroduced. Therefore, this impact is considered *significant*.

Implementing Mitigation Measure 14-2 would reduce this impact to a less-than-significant level.

Mitigation Measure 14-2: Install a screen and fish return

To ensure that Lahontan cutthroat trout are not entrapped in the flume, the project applicant will install a fish screen in the sediment detention channel and a fish return from the detention channel back to the Truckee River during the season before Lahontan cutthroat trout are reintroduced to the Farad-to-Floriston reach of the river. Final screen plans and return design will be approved by USFWS.

14.2.5 Vegetation

Implementation of Alternative B would result in similar impacts on vegetation resources, including waters of the United States, as those described for the proposed project. Under Alternative B there would be slightly less of an effect on big sagebrush scrub and ruderal habitats, and 1 less pine tree would be removed; however, these impacts are considered *less than significant* under both the proposed project and Alternative B. All other construction and operation impacts are the same as for the proposed project.

14.2.6 Wildlife

Implementation of Alternative B would result in similar impacts on wildlife as those described for the proposed project. Under Alternative B there would be slightly less of an effect on big sagebrush scrub and ruderal habitats, and 1 less pine tree would be removed; however, these impacts are considered *less than significant* under both the proposed project and Alternative B. All other construction and operation impacts are the same as for the proposed project.

14.2.7 Recreation

Implementation of Alternative B would result in similar impacts and mitigation for recreation as those described for the proposed project. All construction and operation impacts are the same as for the proposed project, except that the following impact would differ substantially from the proposed project.

Impact 14-4: Change in Boat Passage Resulting from Project Implementation

The diversion structure proposed for Alternative B is not designed for recreational use or passage. However, design elements of this alternative would be constructed to reduce the formation of “keeper” hydraulics that sometimes can flip boats or trap buoyant objects. Recreational boaters would be required to exit the river at a landing and walk around the diversion structure via a portage path.

Because boat passage is not provided, the addition of the diversion structure proposed for this alternative would create a substantial long-term disruption to whitewater activities. Aspects of the design of this alternative would represent an increased risk to public safety when compared to existing conditions.

Furthermore, because the structure would be rebuilt in its original location, the popular boating surf spot that was created by the remnants of the old dam would be removed under this alternative. The removal of the boating surf spot, in conjunction with the creation of an impassable dam, would result in a substantial long-term disruption of whitewater activities.

This impact is considered significant and no mitigation has been identified that would reduce this impact to a less-than-significant level. Therefore, this impact is considered *significant and unavoidable*.

14.2.8 Cultural Resources

Implementation of Alternative B would result in the same impact on cultural resources as that described for the proposed project. No additional impacts would be anticipated under this alternative.

14.2.9 Noise

Implementation of Alternative B would result in the same impacts and require the same mitigation measures related to noise as those described for the proposed project. No additional impacts would be anticipated under this alternative.

14.2.10 Transportation

Implementation of Alternative B would result in the same impacts and require the same mitigation measures related to transportation as those described for the proposed project. No additional impacts would be anticipated under this alternative.

14.2.11 Aesthetics

Implementation of Alternative B would result in similar impacts as those described for the proposed project. Changes in views of the project construction area resulting from implementation of Alternative B would be similar to those of the proposed project, except that the structural components associated with project implementation would be located approximately 750 feet downstream of the old diversion site. Therefore, this alternative would not require the use of a diversion conduit. Downstream views would change as a result of the presence of the new diversion facility, fish screen facility, and outlet weir. However, this impact is considered *less than significant* under both the proposed project and Alternative B. All other construction and operation impacts are the same as for the proposed project.

14.3 Impacts and Mitigation Measures of Alternative C: No Project

14.3.1 Hydrology

Alternative C would have no impact on hydrology because conditions would not change relative to existing conditions. However, existing conditions will continue to result in the erosion of river left.

14.3.2 Water Quality

Alternative C would have no impact on water quality because conditions would not change relative to existing conditions. However, existing conditions will continue to result in turbidity because of the instability and erosion of river left.

14.3.3 Geology, Seismicity, and Soils

Alternative C would have no impact on geology, seismicity, and soils because conditions would not change relative to existing conditions.

14.3.4 Aquatic Resources

Alternative C would have no impact on aquatic resources because flows, water quality, and fish passage conditions would not change relative to existing conditions.

14.3.5 Vegetation

Alternative C would have no impact on vegetation and wetland resources because conditions would not change relative to existing conditions.

14.3.6 Wildlife

Alternative C would have no impact on wildlife because conditions would not change relative to existing conditions.

14.3.7 Recreation

Alternative C would have no impact on stream-based recreation opportunities because hydrologic conditions in the operation area would not change relative to existing conditions.

14.3.8 Cultural Resources

Alternative C would result in the following impact on cultural resources.

Impact 14-5: Change in Historical Resources Associated with the Farad Hydroelectric Power System

Under Alternative C, the project applicant would not build the proposed dam or any other structure in the river. However, water must be diverted for the Farad hydroelectric power system to continue operation as a power-generating facility. Historically, the system took water from the Truckee River, the largest and most reliable source of water in the area, to generate power. Without the use of sufficient water, the Farad hydroelectric system would not continue to be used as a hydroelectric power-generating facility. Given the relative remoteness of the system and its accessibility from the interstate vandals may damage the flume and power plant. In the absence of continued use, the property would be subject to the natural forces of decay and deterioration. Actions that lead to the alteration of all or part of a historic property (such as the alteration of a property through neglect or destruction), are considered to be significant; therefore, this impact is considered *significant*.

Implementation of Mitigation Measure 14-1 would reduce this impact to a less-than-significant level; however, this mitigation measure is only recommended, because if the no-project alternative is selected, the project applicant will not be obligated to implement this measure.

Mitigation Measure 14-1: Implement measures to retain the historical character of the Farad hydroelectric power system

Should Alternative C be selected and there is a state or federal action associated with the property, a plan will be developed for the reuse, "mothballing," or transfer of unused buildings and structures to an entity that will document or maintain these structures. "Mothballing" will include fencing or other measures to ensure that the building and structure will not deteriorate through vandalism, damage from the elements or animals, or other passive causes of decay. Included as a part of the development of the plan, will be a plan for thoroughly

*documenting the historic resources according to the Historic American
Engineering Record.*

14.3.9 Noise

Alternative C would have no impact on noise because conditions would not change relative to existing conditions.

14.3.10 Transportation

Alternative C would have no impact on transportation because conditions would not change relative to existing conditions.

14.3.11 Aesthetics

Alternative C would have no impact on aesthetics because conditions would not change relative to existing conditions.